

We believe there is a consensus among regulators that the lead/lag study produces the most accurate estimate of cash working capital because it is based on a detailed study of company-specific data. However, we do not recommend it here because lead/lag studies are time-consuming and expensive to conduct, and we do not believe the additional cost is justified, particularly for small systems.

The Balance Sheet Method

The balance sheet method measures the difference between current assets and current liabilities. If current assets exceed current liabilities, there is presumed to be positive cash working capital. Accountants define working capital as the difference between current assets and current liabilities referred to as the current ratio or current assets divided by current liabilities. The current ratio measures the Company's ability to satisfy its current liabilities in a timely manner. The regulatory concept, on the other hand, defines cash working capital as the amount of capital investors are required to invest in the utility over and above investment in utility plant and other rate base items so as to cover any gap between cash expenditures in the supply and delivery of service and the collection of revenues related thereto. Under this method, working capital requirements would be assumed to be zero if current liabilities exceeded current assets which is not a sensible result.

The balance sheet approach has not received widespread regulatory acceptance, probably for the reasons noted above. We believe that it is an inappropriate method for determining cash working capital requirements, and we urge the FCC to reject this methodology.

8. Allocating Rate Base And Operating Expenses Between Regulated And Unregulated Activities

In defining the rate base, one should consider only those assets used in providing cable television services. Assets associated with providing unrelated services should not be considered. If an asset is used to provide an unrelated service only, then it should

not be considered. To the extent that an asset is used by both the cable and non-cable business activities, the asset's value will have to be allocated between the cable and non-cable activities. Similarly, the operating expenses incurred by the cable company to provide cable service must be identified. If the cable company engages in other non-cable activities, then the expenses related to these other activities will have to be estimated. While many of the operating expenses are apt to be directly charged to various activities, some overhead activity costs probably will have to be allocated between cable and non-cable activities.

If a cable company owns multiple systems, some capital and operating costs will have to be allocated across the systems (e.g., the cost of functions performed by the corporate offices of the company for all the systems owned by the company such as accounting). The Commission proposes allocating costs between systems based on subscriber counts (NPRM at ¶159). We believe the Commission's recommended approach is reasonable.

However, once the total asset value and operating expenses of a cable system are determined, these assets and operating costs will have to be allocated between the various cable services. Some operating expenses and assets may be directly assignable to a given service offering (or a subset of cable service offerings). If, for example, an asset is only required to provide premium channel or pay-per-view services, then that asset's entire value would be assigned to the premium channel and pay-per-view services. Similarly, some operating expenses may be incurred strictly to provide a specific service and should be assigned entirely to that service group (e.g., fees paid for satellite channel signals should be assigned to the appropriate satellite channel tier). However, a large portion of the capital and operating costs will have to be allocated among the various service offerings.

A strong argument could be made for allocating a large percentage of the capital and operating costs to the basic (Tier 1) services (or to the regulated -- Tiers 1 and 2 --

services as opposed to the unregulated -- premium and pay-per-view -- services) because most of these capital costs would have to be incurred to provide the basic (or regulated) services alone. The incremental capital and operating costs necessary to provide the non-basic (or unregulated) services are relatively small. There is strong precedent for allocating a large share of costs to basic (or regulated) services. In the telephone industry, total local loop costs are allocated to basic telephone service even though the local loop is needed to provide all telephone services.⁴³ However, the FCC has indicated that it has a strong preference to more evenly allocate cost across all cable television services (NPRM at ¶159).

The FCC (NPRM at ¶159) indicates a preference for using number of channels in the various tiers (e.g., Tier 1, Tier 2, and unregulated) to allocate capital and operating costs. However, using just number of channels to allocate these costs would discourage the addition of new channels on the cable system. Cable technology is about to be implemented that will support approximately 500 channels. Given the ability to offer this many channels, cable systems will be able to serve the needs and interests of various minority and special interest groups among their subscribers. Unfortunately, if capital and operating costs are allocated strictly on the basis of channel counts, cable operators will be discouraged from offering programming that will be of interest to only a small minority group.

The following tables presents a hypothetical example illustrating the perverse incentives that result from allocating capital and operating costs based strictly on number of channels. The first table illustrates the implications of allocating costs based strictly on the number of channels. Initially, there are 50 channels on the hypothetical cable system. If 5 new channels are added to provide Spanish language programming for a minority Spanish speaking community served by the cable system, these channels would

⁴³Stuart McDaniel and Eric Smith, "Telephone Cost of Service Studies: A Fundamental Tool", Telephony, January 24, 1983.

be allocated 9.1 percent of the total cost if the number of channels alone is used to allocate costs.

However, if the Spanish speaking community is a small minority, then only a relatively small percentage of the subscribers will subscribe to these channels (e.g., the Spanish language channel package). If the percentage of the subscriber base that subscribes to the various cable offerings also is taken into account (i.e., the channel counts are weighted by the percentage of the subscriber base that pay to access these channels), then, as shown on the second table, a smaller (more appropriate) percentage of costs is allocated to the Spanish language channels. If only 5 percent of the subscribers take the Spanish language channels, then these 5 channels are allocated only 0.7 percent of system costs versus 9.1 percent when channel count alone is used to allocate costs.

With cable technology poised to support the provision of 500 channels, cable television systems can provide programming that will appeal to various relatively small minority and special interest groups. However, if the costs of the system are allocated based on channel counts, high rates will have to be charged to recover these costs if only a small percentage of subscribers have an interest in the programming. These high rates, in turn, will discourage subscription. An allocation of capital and operating costs based on channel counts alone will put pressure on cable system operators to eliminate channels that do not appeal to a relatively large percentage of the subscriber body. Therefore, instead of offering an ever more diversified menu of programming, the cable operators will be incented to reduce channel offerings and to not try to provide programming for the numerous smaller minority and special interest groups among their subscribers.

As indicated in the note to the second table, measuring the percentage of the total subscriber base that uses pay-per-view on a basis that is consistent with the other monthly subscription services is a problem. The other services are paid for monthly (i.e.,

there is a 30 day subscription). Pay-per-view is subscribed to by the program (i.e., a movie, concert, sporting event, etc.). With very few exceptions, a single pay-per-view subscription is for, at most, several hours of programming. One subscriber could access pay-per-view two or more times per day (e.g., watch two pay-per-view movies in a single evening). Therefore, counting each pay-per-view access as being the same as a monthly subscription to a premium channel would assign too large a cost share to pay-per-view. If each pay-per-view access is counted as a one day subscription and the other cable services are counted as 30 day subscriptions, then pay-per-view would be allocated a reasonable percentage of capital and operating costs.

Costs presumably would be allocated among tiers within a cable system periodically (e.g., annually).⁴⁴ These periodic cost allocations would be based on the average subscriber weighted channel counts over a recent historical period (e.g., over the previous 12 months). If channels are to be eliminated during the upcoming period (or shifted between tiers), then the cost allocation must take such changes into account. If channel counts are being reduced, the allocation should be based on the average subscriber weighted channel counts for the channels that will be kept (i.e., eliminating these to be discounted from the allocation process). If new channels are being added, these channels could be assigned an arbitrary low share of capital and operating costs.

Instead, the Commission might have considered not allocating any capital or operating costs to new channels for their initial period of operation. This would encourage cable systems to experiment with new offerings without the risk of not being able to recover the portion of the capital and operating costs that would be arbitrarily assigned to a new channel. The cable companies need only risk the direct costs associated with acquiring whatever is to be put on the new channel and the cost of promoting the new channel. For example, if capital and operating costs were allocated among channels once a year, the "new" channels to be offered during the upcoming

⁴⁴Costs could be allocated among systems (or functions) at the same time.

year would be assigned none of these new costs. After one year, these "new" channels would be assigned the subscriber weighted share of capital and operating costs. If subscriptions to these new channels builds slowly but steadily, the "new" channels will be allocated based on average subscriptions during the last 12 months which will encourage cable operators to allow new channels the time to build a sufficient subscriber base to merit their retention.

ALLOCATION OF COSTS BASED ON CHANNELS ONLY (Prior to Adding Minority Interest Channels)		
Service Groups	(1) Number of Channels	(2) Percentage of Costs Allocated to Group
Tier 1 (Basic)	15	30%
Tier 2 (CPS)	20	40%
Premium	10	20%
Pay Per View	5	10%
Total	50	100%
(After Adding Minority Interest Channels)		
Service Groups	(1) Number of Channels	(2) Percentage of Costs Allocated to Group
Tier 1 (Basic)	15	27.3%
Tier 2 (CPS)	20	36.4%
Premium	10	18.2%
Pay-Per-View	5	9.1%
Minority (Spanish)	5	9.1%
Total	55	100%

ALLOCATION OF COSTS BASED ON CHANNELS AND SUBSCRIBERS: WEIGHTED NUMBERS OF CHANNELS (Prior to Adding Minority Interest Channels)				
Service Group	(1) Number of Channels	(2) Percentage of Total Subscribers Taking Service Group	(3) Weighted Number of Channels: (1) times (2)	(4) Percentage of Cost Allocated to Group
Tier 1 (Basic)	15	100	15	40.0%
Tier 2 (CPS)	20	90	18	48.0%
Premium	10	40	4	10.7%
Pay-Per-View	5	10	0.5	1.3%
Total	50	NA	37.5	100%
(After Adding Minority Interest Channels)				
Service Group	(1) Number of Channels	(2) Percentage of Total Subscribers Taking Service Group	(3) Weighted Number of Channels: (1) times (2)	(4) Percentage of Cost Allocated to Group
Tier 2 (Basic)	15	100	15	39.7%
Tier 2 (CPS)	20	90	18	47.7%
Premium	10	40	4	10.6%
Pay-Per-View	5	10	0.5	1.3%
Minority (Spanish)	5	5	0.25	0.7%
Total	55	NA	37.75	100%

Note: (1) Estimating percentage of total subscribers taking pay-per-view.

Measuring the percentage of total subscribers who use the pay-per-view service is difficult for most cable systems. A subset of subscribers will access pay-per-view a multiple number of times each month. Therefore, counting the number of pay-per-view accesses as the number of subscribers will overstate the percentage of subscribers taking this service. An option would be to treat each access as subscription for one day (1/30th of a monthly subscription) while the subscribers to the other service groups are viewed as whole month (30 day) subscribers.

9. Rate Of Return Recommendations

9.A. Introduction and Overview

The cable television industry is viewed as a much riskier industry than the traditional regulated industries and, for that matter, than the typical industrial company. The risk associated with the expected returns to investing in cable company stocks, as measured by the Capital Asset Pricing Model's (CAPM's) beta, is 30 percent above the overall stock market average. The cable companies are much riskier than the larger telephone companies with which the Commission is familiar.⁴⁵ These larger telephone companies' expected returns have an associated risk 10 percent below the overall stock market average as measured by the CAPM beta.

This high risk for the cable television companies results from their relatively small size, the discretionary nature of the service provided, the broad array of competing entertainment services available to the public, and the fact that many of these cable companies are relatively new companies without a long successful financial track record.

As a result, one would expect the cost of capital to be substantially higher for these cable companies than is the case for the large established telephone companies. Our analyses, discussed in detail below, indicates that the cost of capital for the cable television industry is substantially higher than that for the telephone companies. The cost of capital for cable companies is much closer to that of the entertainment industry companies that compete with cable systems for the consumers' entertainment budget. Our recommended estimate for the pre-tax overall cost of capital for cable television companies is 18.9 percent. We also have recommended a range around this central estimate of 17.3 percent to 20.5 percent so that cable companies facing risks substantially different from the overall cable industry norm can be given an appropriate return.

⁴⁵The seven RBHCs and the five large independents.

9.B. Background

The Commission recommends establishing a single rate of return for all cable operators to be used for the "purpose of setting rates based on a cost of service showing" (NPRM at ¶46). Clearly, the average cost of capital (i.e., the return required in the financial markets) for all cable companies could be established on a periodic (e.g., annual) basis. We recommend that the Commission develop a generic cost of capital estimate for cable companies at regular (e.g., annual) intervals. This recommendation should include a central value and an acceptable range around the value. Companies could petition the returns above the central value but within the range (and intervenors could petition for returns below the central value but within the range) based on documented deviations of risk from the norm.

The Commission also could consider establishing not only a recommended rate-of-return but also an acceptable rate-of-return range centered on the recommended value. Endorsing a range would permit a limited amount of discretion in setting rates of return for individual cable systems. Systems that were "high risk" could be awarded allowed returns near the upper end of the acceptable range while "low risk" systems could be awarded returns near the lower end of the range. Higher risk systems could include, for example, those that have relatively high debt service costs, those that have high physical system costs (e.g., fiber, underground cable, etc.), and those whose penetration is below average. As part of each annual rate of return setting exercise, the Commission might establish guidelines for setting rates for individual cable companies above or below the recommended value but within the recommended range.

The FCC should establish minimum pre-tax interest coverage standards⁴⁶ for cable systems where required returns would be adjusted upward, if necessary, until a

⁴⁶The pre-tax interest coverage ratio is defined as operating income before income tax plus net interest expense as a ratio to net interest expense.

minimum acceptable coverage ratio was attained.⁴⁷ If the recommended rate of return value fails to generate revenues that provide the minimum acceptable coverage ratio, then the revenue requirements for cable system would be increased until minimum acceptable coverage was attained.

9.C. Conventional Rate Of Return Determination

Rates (prices) for service are set so that the required revenues will be generated if the anticipated sales volume is realized. In turn, these required revenues will produce the required return on the ratebase if costs are controlled to anticipated amounts. Conventional rate of return analysis first determines the after-tax required return on common equity, converts this return to its pre-tax equivalent, and then calculates an overall pre-tax cost of capital for debt and equity combined.⁴⁸

The after-tax required return on common equity (ATRCEQ) typically is determined by a financial analyst utilizing one or more of the generally accepted analytical methods. The pre-tax rate of return on common equity (PTRCEQ) is calculated as the after-tax return (ATRCEQ) divided by one minus the effective federal, state, and local corporate income tax rate (RTX) or:

$$\text{PTRCEQ} = \text{ATRCEQ} / (1 - \text{RTX}).$$

The effective debt cost rate (DCR) for the regulated company also must be determined. This can be accomplished by calculating the current debt cost rate or the expected debt cost rate for a future year. The latter approach requires anticipating

⁴⁷The bond rating agencies, such as S&P and Moody's, have set minimum acceptable pre-tax interest coverage standards for a company's debt offerings to be classified as investment grade. For telephone companies, the minimum pre-tax interest cover is approximately 2.3.

⁴⁸The capital structure also can contain preferred stock and minority interest. If these other asset claims are present, the overall pre-tax cost of capital also includes their costs.

retirements and refinancing and projecting future interest rates. The pre-tax and post-tax debt cost rate is the same because interest expenses are tax deductible.

Finally, the capital structure of the regulated company must be calculated (i.e., the percentage of debt and equity capital must be determined). If the regulated company has an unusual capital structure (or if the companies comprising the regulated industry have a wide range of capital structures), a hypothetical capital structure can be used to calculate the overall pre-tax cost of capital for the regulated company. Defining the equity share of total capital as SEQ, the overall pre-tax cost of capital (PTRCAP) is calculated as follows:

$$\text{PTRCAP} = \text{SEQ} \times \text{PTRCEQ} + (1 - \text{SEQ}) \times \text{DCR}$$

An alternative to the conventional approach would be to directly estimate the pre-tax overall cost of capital (rate of return) based on the pre-tax overall returns of "comparable" groups of companies. Such an approach would be particularly beneficial if the capital structure of the companies in the regulated industry were very diverse. If the capital structures are diverse, the cost of common equity would vary substantially among companies within the industry. A company with a high equity share of total capital would tend to have a lower cost of common equity than would a company with a low equity share. Low equity share companies are highly leveraged making the return to equity very financially risky. As a result, the market demands a high return to supply equity capital to such a highly leveraged company. Conversely, a high equity share implies a much lower financial risk to the equity return. Therefore, the market would supply this equity capital at a much lower rate than it would to the highly leveraged company.

The total cost of capital to a company may be relatively constant for significantly different capital structures (i.e., as leverage increases, the rising market price for equity capital approximately offsets the reduction in capital costs stemming from giving a

greater weight to lower cost debt). Modigliani and Miller (M-M) put forth a proposition in a famous paper that "the average cost of capital to any firm is completely independent of its capital structure and is equal to the capitalization rate of a pure equity stream of its class."⁴⁹ Subsequent research regarding the proposition has raised serious questions. On the theoretical side, introducing the effect of corporate taxes into the analysis can lead to the conclusion that 100 percent debt provides the least expensive capital. However, introducing personal and corporate income taxes together supports the M-M proposition. On the empirical side, the results are inconclusive.

If the overall cost of capital is not strongly affected by the capital structure (i.e., M-M are at least partially correct), then direct estimation of the overall cost of capital for an industry consisting of firms with a diverse capital structure should be more tractable than the conventional approach.

9.D. Methods Used To Determine The Cost Of Common Equity

In a conventional rate of return determination, the required return on (cost of) common equity typically is estimated using a number of different analytical methods. The analytical methods most commonly employed include:

- Risk Premium Analysis;
- Discounted Cash Flow (DCF) Model;
- Capital Asset Pricing Model (CAPM);⁵⁰ and
- Comparable Earnings Analysis.

⁴⁹Modigliani F. and M.H. Miller, "The Cost of Capital, Corporate Finance, and the Theory of Investment," American Economic Review, June 1958, p. 268.

⁵⁰In a few jurisdictions (e.g., New York), extensions to CAPM also are being considered including the Arbitrage Pricing Theory (APT) Model and the Fama-French (F-F) Model.

Risk premium analysis typically estimates the cost of equity capital by averaging the historic spread between the return on common equity return and the long-term debt cost rate or for the market as a whole. Adding this average historic spread to the expected long-term debt cost (rate) for the regulated company produces an estimate of the projected cost of common equity to the regulated company. In the typical application of the risk premium, the average historic spread is used as an estimate of expected future spread. CAPM also can be viewed as a method for estimating the expected future spread.⁵¹

The two model based methods (DCF and CAPM) can be applied directly to the data for the regulated company, to the data for a group of "comparable" companies, or to both the company and the "comparable" group data. In financial analysis, "comparable" is used to mean similar but not identical. The similarity can be in terms of markets served (e.g., other companies that compete for the same consumer dollars) and/or in terms of companies that are perceived by investors to have similar earnings potential and risk (e.g., other high growth stocks, other "high tech" companies' stocks, and other stocks with similar risk as indicated by the CAPM beta measure).

The DCF and CAPM model based approaches have been subject to substantial recent criticism.⁵² The alternative approaches suggested include moving to more sophisticated modeling methods such as the APT and Fama-French approaches, but the older comparable earnings approach also has been promoted.⁵³ One of the key

⁵¹The APT and F-F models also can be viewed this way.

⁵²See for example Whitaker, Win, "The Discounted Cash Flow Methodology: Its Use in Estimating A Utility's Cost of Equity", Energy Law Journal, Vol. 12, 1991, pp. 265-290 (hereinafter Whitaker, Energy Law Journal); Fama, Eugene F., 1991, "Efficient Capital Markets: II", Journal of Finance, 46, 1575-1617", and Fama, Eugene F. and Kenneth R. French, 1992, "The Cross Section of Expected Stock Returns", Journal of Finance, 47, 427-465.

⁵³Whitaker, Energy Law Journal.

criticisms of the "comparable" earnings approach has been that by selecting an "appropriate" comparable group, a financial analyst can obtain any a-priori desired result, but this criticism is eliminated if the "comparable" group or groups are specified by the regulatory body. We propose that the Commission specify several comparable groups that include companies with similar risk and also industries that compete with the cable television industry for the consumers' dollar. The specific companies to be included in the "comparable" group need not be listed, but specific criteria for selection must be specified. For example, if telephone companies were specified to be one of the "comparable" groups to be examined, the selection criteria could be all telephone companies considered by Value Line. If a subset of the S&P Industrials was to be selected, then the selection criteria could be all companies with risk measures as reported by Value Line that fall within a given range of the same risk measures reported by Value Line for all cable companies.

Comparable earnings is derived from the "corresponding risk" standard of the landmark cases of the U.S. Supreme Court. Thus, comparable earnings is consistent with the Hope doctrine that the return to the equity owner should be commensurate with returns on investments in other firms having corresponding risks.

The comparable earnings method is based on the opportunity cost principle which maintains that the true cost of an investment is equal to the cost of the best available alternative use of the funds to be invested. The opportunity cost principle is consistent with one of the fundamental principles upon which regulation rests - that it is intended to act as a surrogate for competition and to provide a fair rate of return to investors.

The comparable earnings method is designed to measure the returns expected to be earned on the book common equity, in this case net worth, of similar risk enterprises. Thus, it provides a direct measure of return, since it translates the competitive principles upon which regulation rests into practice. Under the comparable earnings approach, the historical and expected future earnings rates for a "comparable"

group of companies are used directly to produce an estimate of the required return for the regulated company. If several satisfactory "comparable" groups of companies can be identified, then the historical and expected future earnings of the several groups can be evaluated and combined to form an expected (recommended) return rate for the regulated company. Further, the range of estimates produced by the several "comparable" groups can be used to establish an acceptable range centered on the recommended value.

Use of several "comparable" groups has the advantage of making the result not wholly dependent on the economic fortunes of a given type of company (e.g., telephone companies) or to companies serving the same market (e.g., companies serving the recreation and leisure markets). Therefore, if a "comparable" earnings approach is taken, a more stable and reasonable result should be obtained if several "comparable" groups are evaluated. In such a circumstance, the recommended return would combine (be an average of) the results produced by analyzing the separate groups. The variation in results produced across "comparable" groups could be used to define an acceptable range centered on the recommended value.

A comparable earnings approach need not rely solely on historical earnings performance of the companies in the "comparable" group. If the companies or the groups are limited to those that are analyzed by a service like Value Line, then the analysis can consider both the historical earnings performance (e.g., average over the last 5 years) as well as the expected future earnings performance as anticipated by the Value Line analysts.⁵⁴ Relying on a source like Value Line for the expected future earnings forecast has the advantage of simplicity (i.e., no independent modeling effort need be done) and of analyst neutrality.

⁵⁴See David A. Gordon, Myron J. Gordon, and Lawrence I. Gould, "Choice Among Methods of Estimating Share Yield," *Journal of Portfolio Management*, Spring 1989, pp. 50-55.

The comparable earnings approach can be used to determine the pre-tax overall cost of capital as well as the after-tax cost of common equity. The same set of comparable groups of companies can be used to produce estimates of both capital cost measures. Finally, if the companies in the groups are limited to those considered by Value Line, the estimates of both capital cost measures can take into account both historical averages and analyst forecasts.

The energy utilities in New York State in conjunction with the Staff of the New York Public Service Commission recently have performed an enormous amount of research into alternative approaches to determining the cost of common equity and have recently released a study presenting their findings.⁵⁵ This work was done as part of a now two-year long effort (beginning in August 1991) to evaluate the DCF approach that has been embraced by the New York Commission for many years (the retention growth DCF model applied to the regulated company's data). Also, a wide range of alternatives was tested. These analyses considered the DCF, CAPM, APT, Fama-French, Comparable Earnings, and Allowed Returns in Other Jurisdictions approaches. Key conclusions of the study were to reject sole reliance on the DCF method, to combine multiple estimates of the cost of equity capital, and to rely on analyses of data for proxy or barometer group companies instead of the data for any single company.⁵⁶

9.E. The Capital Structure of Cable Companies is Very Diverse

As shown in the table below, the capital structures for cable companies are extremely diverse. Equity as a percentage of total assets ranges from a high of 60 percent to a low of -100 percent.⁵⁷ Of the 12 companies listed in the table, five have

⁵⁵Return on Equity Consensus Document, prepared by the signatory remarks of the Electric and Gas Industry Group, Case 91-M-0509, June 2, 1993 (hereinafter the Consensus Document).

⁵⁶Consensus Document, p. 3.

⁵⁷Negative equity results from a very substantial accumulated deficit. Losses since system acquisition have eliminated the initial positive equity positions for these systems.

negative equity. The range of positive equity shares is 60 percent to 18 percent. Therefore, even without the negative equity cases, the capital structures of companies in the cable television industry is highly diverse.

This capital structure diversity implies that a hypothetical capital structure should be employed if the conventional approach of first estimating after-tax cost of common equity is employed. Given the equity percentage diversity in the table, a hypothetical capital structure employing 50 percent equity and 50 percent debt is reasonable (the Commission may have anticipated this result in the NPRM at ¶52). Alternatively, the issue of defining a hypothetical capital structure could be eliminated by electing to directly estimate the pre-tax overall cost of capital.

SELECTED CABLE COMPANY EQUITY TO ASSET RATIOS				
		Equity (Mil \$)	Total Assets (Mil \$)	Equity/Asset Ratio (Percent)
Jones Intercable Investors, L.P.	12/31/92	\$31.5	\$52.6	59.8%
Knight Ridder	12/27/92	\$1,181.8	\$2,458.1	48.1%
Liberty Media 1/	12/31/92	\$365.7	\$808.9	45.2%
Times Mirror Company	12/31/92	\$1,700.6	\$4,327.3	39.3%
Tele-Communications, Inc.	12/31/92	\$1,486.0	\$4,681.0	31.7%
TCA Cable TV, Inc.	10/31/92	\$78.0	\$289.9	26.9%
Viacom International, Inc.	12/31/92	\$765.5	\$4,317.1	17.5%
Comcast Corporation	12/31/92	(\$181.6)	\$4,271.9	-4.3%
Century Communications Corp.	5/31/92	(\$178.3)	\$1,358.0	-13.1%
Continental Cablevision, Inc.	12/31/92	(\$1,486.2)	\$2,003.2	-74.2%
Adelphia Communications Corp.	5/31/93	(\$868.6)	\$949.6	-91.5%
Cablevision Systems Corp.	12/31/92	(\$1,250.2)	\$1,251.2	-99.9%

1/ Equity includes a small amount of preferred stock.

Source: Published company financial statements.

9.F. Recommended Methodologies to Determine the Cost of Capital for Cable Systems

We recommend that the FCC consider two parallel approaches to estimating the cost of capital for cable systems: (1) direct estimation of the pre-tax overall cost of capital; and (2) estimation of the after-tax cost of common equity and then using a hypothetical 50/50 capital structure to estimate the pre-tax overall cost of capital.⁵⁸ We believe that the pre-tax overall cost of capital approach is simpler to apply in that it requires fewer assumptions (e.g., no corporate tax rate, no hypothetical capital structure, and no debt cost rate need be assumed or estimated). The pre-tax overall cost of capital approach has been used as a check for estimates generated using the more conventional after-tax cost of common equity based approaches. However, we believe that the Commission will see the advantages of the pre-tax overall cost of capital approach as a result of the parallel application of this new approach and the conventional after-tax return on common equity approach to the proxy groups selected for cable systems.

The recommended method for estimating both the pre-tax overall cost of capital and the after-tax cost of common equity is the comparable earnings approach. The comparable earnings approach recommended here is a much more constrained technique than the generic comparable earnings approach. We believe that the Commission, if it adopts the comparable earnings approach, must specify the comparable groups to be used and also how the comparable earnings calculations are to be done. We have specific recommendations regarding both how the comparable groups should be defined for cable systems and also how the calculations should be done.

We have identified four candidate comparable groups for cable systems; namely:

⁵⁸To estimate the pre-tax overall cost of capital, an effective corporate income tax rate will have to be determined (e.g., 40 percent) and the debt cost rate will have to be estimated. The average percent debt costs for cable companies could be used or the average debt cost rate for a proxy group of companies could be used.

- A sample of 70 companies from the S&P Industrials that have measure characteristics similar to those of the cable companies;
- Broadcasting companies;
- Telecommunications companies; and
- Recreation and leisure industry (entertainment) companies.

The companies considered for inclusion in these groups have been limited to those that are covered by the Value Line service. Value Line has the broadest coverage of any of the competing services. Value Line does not cover some of the smaller lightly traded companies. Restricting the list of companies that can potentially enter the comparable groups to those covered by Value Line provides ready access to published data that can be used to compute historical and forecast estimates of both the pre-tax overall rate of return and the after-tax rate of return on common equity. The recommended estimate for capital costs is the simple average of historical average cost and the projected future cost.

9.G. Analysis of the Financial Characteristics of Five Large Cable Companies

Value Line reports on five cable television companies.⁵⁰ Attachment 2 provides various financial statistics taken from Value Line and Compustat. As shown on the first page of Attachment 2, the average of Value Line's adjusted CAPM betas for these five companies is 1.30 indicating that stocks are more volatile (risky) than the returns from a "typical" stock. If a company's stock is perceived as being of average risk, then its

⁵⁰These companies are Cablevision, Comcast, Multimedia, TeleCommunications, and Viacom. Value Line classifies companies according to their primary line of business. As a result, Time-Warner and Gaylord are in Value Line's recreation and leisure industry groups.

adjusted beta will equal approximately 1.0. The average beta for the S&P Industrials is close to 1.0.

The average cost of debt for the five cable companies over the last five years is 11.0 percent and, for 1992, is 8.5 percent (see page 2 of Attachment 2). The average of the pre-tax overall rate of return over the last five years has been 14.0 percent reflecting, in part, the continuing U.S. recovery. This return is expected by Value Line analysts to increase to 21.4 percent over the next five years (see page 3 of Attachment 2). This strong recovery assumes a recovery from the current recession. The expected future return for most industry groups is higher than the recent historical average returns due to the expected recovery from the prolonged recession. The simple average of the historical and forecast pre-tax overall rate of return is 17.7 percent $((14.0 + 21.4) \div 2)$. After-tax returns on equity are not reported because the negative equity position of several of these companies renders the after-tax rate of return on equity calculations meaningless.

9.H. Defining the Comparable Groups

S&P Industrial Subset

The first comparable group consists of 70 of the S&P Industrial companies selected because the risk measures, as reported by Value Line, are similar to those for the five cable companies (see Attachment 3). The two risk measures used are the Value Line beta (a measure of the systematic risk) and the residual standard deviation from the regression used by Value Line to calculate its beta (a measure of unique or unsystematic risk).

These two risk measures are derived from the capital asset pricing model (CAPM). CAPM is expressed as follows:

$$R_{it} = \alpha_i + \beta_i R_{mt} + \epsilon_{it}$$

where:

R_{it} = The return on security i (or the group of securities i) during period t;

R_{mt} = The return on a broad stock market index (e.g., all New York Stock Exchange or the S&P Industrial stocks) during period t;

α_i = Alpha, which is the constant or intercept term, and is interpreted as the expected return on security i when R_{mt} equals zero;

β_i = Beta, or the slope coefficient, which indicates the relationship between fluctuations in the returns on security i and the overall market returns (R_{mt}). If β_i equals 1, then the returns on security i have the same volatility (business risk) as do the market returns. If β_i is less than 1, then the returns to security i are less volatile (less risky) than the returns for a typical stock. If β_i is greater than 1, then the returns to security i are more volatile (have a greater business risk) than the returns from a broad portfolio of stocks. β_i is a measure of the systematic risk of security i in that it is the risk common to all stocks and, therefore, cannot be diversified away.

ϵ_{it} = The residual error term for security i in period t. This term measures the unique or unsystematic risk associated with the returns to security i which, according to CAPM theory, can be diversified away.

The total risk to the returns to security i can be expressed as follows:

Total Risk of Security i = Market (Systematic) Risk to the Returns on Security i
+ Specific (Unique or Unsystematic) Risk to the
Return on Security i

or

$$\sigma_i^2 = \beta_i^2 \sigma_m^2 + \sigma^2(\epsilon_i)$$

where:

$\sigma_i^2 =$ Total risk (variance) of security i;

$\sigma_m^2 =$ Risk (variance) of the market return;

$\beta_i =$ The CAPM beta of security i which measures the sensitivity of R_{it} to R_{mt} ;

$\beta_i^2 \sigma_m^2 =$ The market (systematic) risk to the return on security i; and

$\sigma^2(\epsilon_i) =$ Risk (variance) that is unique (specific or unsystematic) to the returns on security i which is also referred to as the diversifiable risk.

CAPM theory provides two measures of relative risk. The systematic risk for a stock can be characterized by its beta because the systematic risk to the returns of a given security is proportional to the given security's beta. The unique (or unsystematic) risk of a given security is characterized by the residual standard deviation of the regression linking its return (R_{it}) to the market return (R_{mt}) or by $\sigma(\epsilon_i)$. The greater a given security's residual standard deviation, the greater effect events specific to a given company's operations have on its returns. Value Line provides estimates of beta (β_i) and the standard error of the regression ($\sigma(\epsilon_i)$) for every stock that it covers.

In essence, companies which have similar betas and residual standard deviations have similar investment risk (i.e., the sum of systematic (market) risk and unsystematic (business and financial) risk). Page 1 of Attachment 2 shows the betas estimated from the above CAPM regression equation (the "unadjusted betas" column) and the standard error ($\sigma(\epsilon_i)$) from the regression (the "residual standard deviation" column) for the five cable companies covered by Value Line.

The average unadjusted beta for the five cable companies is 1.41. The three standard deviation range around 1.41 is 0.98 to 1.84. The residual standard deviation average is 4.1492 and the range around it is from 3.6033 to 4.6951.⁶⁰ Of the almost 400 S&P Industrials, 70 companies fall within these two risk measures. Attachment 3 presents financial statistics for these 70 S&P Industrial companies including the two cost of capital estimates.

Telecommunications Group

The telecommunications industry currently competes with the cable television industry and its competition is expected to intensify. The telecommunications industry is much less risky than cable television companies for many reasons. First, telecommunications companies have essentially 100 percent of the market in the areas served while the cable television companies typically have a much lower percentage. Telephone companies also are much larger than the typical cable company implying that the market will assign a higher risk to the earnings of the cable companies. Telephone companies also are old established firms with a long track record of profitability while the cable industry is relatively new and has no track record of profitability. Telephone

⁶⁰This range is defined based on the standard error for the mean return over the estimation period. The standard error for the mean return equals the residual standard deviation divided by the square root of the sample size used by Value Line to estimate its betas. Value Line uses five years of weekly data to estimate its betas for a sample size of 520. The standard error for the mean return of the cable company securities is therefore 0.181954 ($4.1492 \div 22.804$). The range is defined as plus or minus 3 times 0.181954.

companies offer a service which is viewed as a virtual necessity with no direct competition (i.e., local loop telephone service) while cable television provides a discretionary service in competition with the services provided by a broad array of entertainment industry companies (movies, television, radio, video retailers, video games, publishers, etc.).

Two telecommunications comparable groups were evaluated: (1) all telephone companies considered by Value Line; and (2) the seven Regional Bell Holding Companies and the five largest independents. The second group is the preferred group because it is expected to be stable over time. Attachment 4 presents the financial statistics for this group including the two cost of capital estimates.

Broadcast Group

The broadcast group includes both the network and local television stations. Both types of companies are in close competition with cable television companies. The Value Line broadcast group contains only five companies. Attachment 5 presents the financial statistics for these companies including the two cost of capital estimates.

Recreation Group

Value Line defines a recreation group that includes all companies that supply products and services related to recreation. The industries included are:

- Motor boat manufacturers;
- Motorcycle manufacturers;
- Game and toy manufacturers;
- Movie and TV production companies;
- Publishing companies;
- Movie theaters;
- Resorts;
- Cruises; and